

## INDEX

Accelerator admixtures, concrete .....	3.1.2.4
Admixtures (concrete), definition .....	3.1.2.4
Aggregate, definition .....	3.1.2.2
Air-entraining admixtures, concrete .....	3.1.2.4
Aluminum alloys, steel substitute .....	7.4.1.4
Armor units, reinforced concrete .....	1.4.2.9
.....	5.1.3
As-built drawings .....	1.6.2
Backing log, preservatives .....	2.1.4.8
<i>Bankia</i> .....	2.1.2.2
Barges .....	1.7.2
Barricades, safety .....	1.8.3
Beating piles	
Repair.....	2.3.2.1
.....	2.3.2.2
Replacement .....	2.3.1.1
Berthing .....	1.8.6
Biological corrosion.....	7.1.2
Bolt holes, preservatives .....	2.1.5
Braces	
Repair (flexible polyvinyl chloride sheet).....	2.3.2.3
Replacement .....	2.3.1.3
Breakwater .....	
Definition .....	1.4.2.9
Structural damage (rubble-mound).....	5.2.2.3
Brown rot, timber .....	2.1.2.1
Bulkheads (wood), replacement .....	2.3.1.10
Bullrails, preservatives .....	2.1.4.8
Caisson, entrance .....	1.4.2.5.1
Cast-in-place concrete, repair method .....	3.4.3
Cathodic protection	
Definition .....	7.3.1
Galvanic anode system.....	7.3.2
Impressed current system .....	7.3.2
Catwalks, replacement .....	2.3.1.11
Cement	
Definition .....	3.1.2.1
Marine use .....	3.1.2.1
<i>Chelura</i> .....	2.1.2.2
Chocks	
Preservatives.....	2.1.4.9
Replacement .....	2.3.1.6
Coal tar epoxy, protective coating (steel).....	7.2.3
Coal tar, protective coating (steel).....	7.2.3
Coatings, concrete .....	3.4.9
Compressed air distribution system, inspection ..	7.5.3.4.6
Compressive strength, concrete .....	3.1.3.2
Concrete	
Accelerated weathering .....	3.2.1.2
Barrier (pile repair).....	2.3.2.2.2
Chemical attack .....	3.2.1.3
Cracks .....	3.2.2.1
Curing .....	3.2.1.5
Curing temperature .....	3.1.4.3
Definition .....	3.1.1
Deterioration .....	3.2.1
Diamond-drilled cores .....	3.3.2
Dry-pack mortar repair .....	3.4.2
Durability .....	3.1.3.3
Fiber-reinforced .....	3.1.4.2
Finishing .....	3.2.1.5
High impedance voltmeter testing .....	3.3.3
Mechanical damage .....	3.2.1.8
Normal weathering .....	3.2.1.1
Plastic shrinkage .....	3.2.1.6
Prestressed .....	3.1.4.1
Protective coatings .....	3.4.9
Repair .....	3.4
Cast-in-place method .....	3.4.3
Epoxy resin method .....	3.4.8
Prepacked concrete method .....	3.4.5
Pumped method .....	3.4.7
Shotcrete method .....	3.4.4
Tremie method .....	3.4.6
Sonic testing .....	3.3.3
Spalls .....	3.2.2.2
Specialized .....	3.1.4
Strength .....	3.1.3.2

**Index-1**

Concrete (continued)	
Structural settlement.....	3.2.1.7
Test hammer .....	3.3.2
Ultrasonic testing.....	3.3.3
Underwater.....	3.1.4.3
Volume change.....	3.2.1.4
Water/cement ratio.....	3.1.2.3
Watertightness .....	3.1.3.4
Workability .....	3.1.3.1
Copper alloys, steel substitute.....	7.4.1.3
Corrosion.....	1.5.3
Cathodic protection.....	7.3.1
Cell .....	7.1.1
Definition .....	7.1.1
Inhibitive pigments.....	7.2.1
Products, chemical analysis.....	7.5.2.6
Steel-reinforced concrete .....	3.2.1.4
Cracks, timber .....	2.1.6
Crane trackage .....	1.4.2.7
Creosote, preservative .....	2.1.3
Crustaceans .....	2.1.2.2
Curb, preservative.....	2.1.4.8
Currents.....	1.8.7
Decking	
Preservatives.....	2.1.4.10
Replacement .....	2.3.1.7
Degree-of-hazard	
Definition .....	1.4.1.1
Field measurements .....	1.6.1
Deterioration	
Causes.....	1.5.3
Concrete.....	3.2.1
Differential environmental corrosion .....	7.1.2
Divers	
Maintenance.....	1.7.1
Timber inspection .....	2.2.2
Dolosse (concrete armor units) .....	5.1.3
Dolphin	
Definition .....	1.4.2.3
Protection.....	1.8.5
Replacement .....	2.3.1.11
Dry abrasive blasting (steel).....	7.2.2
Drydock	
Inspection.....	7.5.3.6
Repair .....	7.6.6
Drypack mortar, concrete repair.....	3.4.2
Dry rot, timber.....	2.1.2.1
Electric power transmission/distribution system, inspection .....	7.5.3.4.7
Electrochemical oxidation .....	7.1.1
Epoxy adhesives.....	8.1.5
	8.2.6
Epoxy-polyamide, Protective coating (steel) .....	7.2.3
Epoxy putties .....	8.1.5
	8.2.6
Epoxy resin, concrete repair.....	3.4.8
Erosion.....	1.5.3
Erosion-corrosion .....	7.1.2
Excavations .....	1.7.5
Fender piles	
Repair .....	2.3.2.4
Replacement .....	2.3.1.9
Fenders, protection .....	1.8.5
Fiberglass construction	
Filament winding method.....	8.2.3
Lay-up method .....	8.2.1
Spray-up method.....	8.2.2
Fiberglass-reinforced plastic structures .....	8.1.1
Fiber-reinforced concrete .....	3.1.4.2
Fire curtain walls	
Preservatives.....	2.1.4.1
Replacement .....	2.3.1.8
Floating drydock, definition .....	1.4.2.5.2
Fleet mooring, definition .....	1.4.2.4
Floating steel pontoons, inspection .....	7.5.3.2
Floating steel structures	
Inspection .....	7.5.3.7
Repair .....	7.6.7
Foamed plastic structures .....	8.1.2
Foaming-in-place, urethane foam .....	8.2.4
Fungi	
Definition .....	2.1.2.1
Deterioration .....	1.5.3
Timber structures .....	2.1.1
Galvanic anode system. cathodic protection.....	7.3.2
Galvanic corrosion .....	7.1.2
Gas distribution system, inspection .....	7.5.3.4.5
Granite, graving docks .....	4.1.2
Graving dock, definition .....	1.4.2.5.1
Gribble .....	2.1.2.2
Groins	
Definition .....	1.4.2.10
Structural damage (rubble-mound) .....	5.2.2.2
Grouting .....	4.3.5
Hardware, timber structures .....	2.1.7
H-piling, repair .....	7.6.2.1
Hotwater distribution system, inspection .....	7.5.3.4.2

## Index 2

Impressed current system, cathodic protection .....	7.3.2
Inspection	
Barges.....	1.7.2
Definition.....	1.4.1.1
Divers.....	1.7.1
Drydocks .....	7.5.3.6
Electronic (concrete).....	3.3.3
Floating steel pontoon structures .....	7.5.3.2
Floating steel structures.....	7.5.3.7
Ladders .....	1.7.4
Mechanical (concrete).....	3.3.2
Mooring fittings.....	7.5.3.5
Protective coatings (steel).....	7.2.5
Rafts .....	1.7.2
Rubble-mound structures.....	5.3.1
Scaffolds .....	1.7.3
Soil-containing structures.....	6.3
Steel pilings.....	7.5.3.1
Steel structures.....	7.5
Steel supporting components.....	7.5.3.3
Stone masonry structures .....	4.2.1
Timber structures.....	2.2
Utility lines.....	7.5.3.4
Visual	
Concrete.....	3.3.1
Steel.....	7.5.2.1
Instructions, safety.....	1.8.1
Intraservice functions.....	1.1.3.1
Jetties	
Definition .....	1.4.2.8
Structural damage (rubble-mound) .....	5.2.2.4
Joint service responsibility .....	11.2
Ladders .....	1.7.4
Life belts, safety .....	1.8.2
<i>Limnoria</i> .....	2.1.2.2
Maintenance	
As-built drawings .....	1.6.2
Definition .....	1.4.2.1
Divers.....	1.7.1
Economics.....	1.5.2
Engineering .....	1.3.2
Policy .....	1.3.2
Sketches.....	1.6.3
Program .....	1.5.1
Marine borers	
Definition .....	2.1.2.2
Timber structures.....	2.1.2
Marine organisms	
Control .....	1.4.1.4
Deterioration.....	1.5.3
Marine railway, definition .....	1.4.2.5.3
<i>Martesia striata</i> .....	2.1.2.2
Mechanical damage .....	1.5.3
Microscopic testing, steel structures.....	7.5.2.5
Mold, timber structures .....	2.1.2.1
Mole, definition .....	1.4.2.7
Mollusks .....	2.1.2.2
Mooring fittings	
Inspection.....	7.5.3.5
Repair .....	7.6.5
Mound, definition .....	5.1.1
Nickel alloy, steel substitute .....	7.4.1.2
Oil-borne preservatives .....	2.1.3
Pentachlorophenol, preservatives .....	2.1.4.10
Personnel, protection .....	1.8.2
Petrolatum coated tapes, protective coatings (steel) .....	7.2.3
Petroleum fuel distribution system, inspection .....	7.5.3.4.8
Pholads .....	2.1.2.2
Piers	
Definition .....	1.4.2.1
Wrappings (PVC) .....	8.2.5
Pile braces	
Freshwater preservative .....	2.1.4.6
Marine preservative .....	2.1.4.3
Pile caps	
Freshwater preservative .....	2.1.4.5
Marine preservative .....	2.1.4.3
Replacement .....	2.3.1.2
Piles, preservatives .....	2.1.4.1
Pile repair	
Concrete barrier .....	2.3.2.2.2
Flexible PVC .....	2.3.2.2.1
Section replacement .....	2.3.2.2.3
Pile top caps	
Freshwater preservative .....	2.1.4.4
Marine preservative .....	2.1.4.2
Pipe piling (steel), repair .....	7.6.2.3
Planning .....	5
Plastics, steel substitutes .....	7.4.2
Plastic wraps .....	8.1.4
Polystyrene foam structures .....	8.1.2
Polyurethane foam (flexible), pile repair .....	2.3.2.2.1

## Index 3

Poly(vinyl chloride) sheets	
Brace repair.....	2.3.2.3
Pile wrappings .....	2.1.4.3
Potential measurements, cathodic protection systems.....	7.5.2.7
Prepacked concrete, concrete repair .....	3.4.5
Preservatives.....	
Creosote.....	2.1.3
Creosote solutions.....	2.1.3
Oil-borne .....	2.1.3
Pentachlorophenol.....	2.1.4.10
Water-borne .....	2.1.3
Pressure treatment .....	2.1.4
Pressure treatments, preservatives .....	2.1.4
Prestressed concrete .....	3.1.4.1
Programming.....	1.5.1
Protective coatings	
Concrete.....	3.4.9
Film thickness .....	7.2.5
Steel	
Application .....	7.2.4
Inspection.....	7.2.5
Surface preparation.....	7.2.2
Types .....	7.2.3
Pumped concrete, concrete repair .....	3.4.7
Quaywall, definition.....	1.4.2.6
Radiography testing, steel structures.....	7.5.2.4
Rafts .....	1.7.2
Railroads .....	1.4.2.7
Repair	
Definition .....	1.4.1.3
Drydocks .....	7.6.6
Excavations .....	1.7.5
Floating steel structures.....	1.7.6.7
H-piling.....	7.6.2.1
Mooring fittings.....	7.6.5
Steel piling.....	7.6.2
Steel pipe piling .....	7.6.2.3
Steel sheet piling .....	7.6.2.2
Steel supporting components.....	7.6.3
Stone masonry	
Grouting .....	4.3.5
Tuck-pointing.....	4.3.4
Utility lines .....	7.6.4
Responsibility .....	
Air Force.....	1.2.3
Army .....	1.2.1
Joint service .....	1.2
Navy.....	1.2.2
Riprap, definition.....	5.1.3
Roads, paved .....	1.4.2.7
Rubber fenders.....	8.1.3
Rubber, steel substitute .....	7.4.3
Rubble, definition .....	5.1.2
Rubble-mound structures.....	
As-built drawings .....	5.4.1
Breakwater .....	1.4.2.9
Deterioration .....	5.2.1
Drainage .....	5.3.2
Inspection .....	5.3.1
Repair/replacement .....	5.4.2
Seawall .....	1.4.2.11
Structural damage	
Breakwater .....	5.2.2.3
Groin.....	5.2.2.2
Jetty .....	5.2.2.4
Seawall .....	5.2.2.1
Rust inhibitor, steel coatings .....	7.2.2
Sacrificial anodes .....	7.3.2
Safety belts.....	1.8.2
Safety, instructions .....	1.8.1
Salt treatments, timber.....	2.1.4.10
Sap stain fungi, timber .....	2.1.2.1
Scaffolds	
Hung .....	1.7.3.3
Pipe.....	1.7.3.2
Wood .....	1.7.3.1
Seasoning checks, timber .....	2.1.6
Seawalls	
Definition .....	1.4.2.11
Structural damage (rubble-mound) .....	5.2.2.1
Sewage collection system, inspection .....	7.5.3.4.4
Sheeting (wood), replacement.....	2.3.1.10
Sheet piling (steel), repair .....	7.6.2.2
Shipworm .....	2.1.2.2
Shotcrete, concrete repair .....	3.4.4
Shrinkage cracks, stone masonry structures .....	4.3.3
Soft rot fungi, timber structures.....	2.1.2.1
Soil	
Classification .....	6.1.3
Compaction control .....	6.2.2
Compaction methods.....	6.2.3
Soil-containing structures	
Definition .....	6.1.1
Dewatering .....	6.4.3
Erosion .....	6.4.1
Grouting .....	6.4.4
Inspection .....	6.3

## Index-4

Soil-containing structures (continued)	
Repair .....	6.4
Sealing.....	6.4.2
Soil placement.....	6.2.1
Spacer blocks, preservatives.....	2.1.4.7
Spalls, concrete .....	3.2.2.2
<i>Sphaeroma</i> .....	2.1.2.2
Stainless steels, steel substitute.....	7.4.1.5
Standards, development .....	1.3.1
Steam distribution/condensate return system, inspection .....	7.5.3.4.1
Steel structural substitutes.....	7.4
Steel structures	
Cathodic protection.....	7.3.1
Corrosion.....	7.1
Corrosion products .....	7.5.2.6
Metal thickness.....	7.5.2.2
Microscopic testing .....	7.5.2.5
Potential measurements .....	7.5.2.7
Protective coatings .....	7.2.1
Radiography testing.....	7.5.2.4
Repair .....	7.6.1
Surface preparation for coatings .....	7.2.2
Ultrasonic testing .....	7.5.2.3
Visual inspections.....	7.5.2.1
Steel supporting components	
Inspection.....	7.5.3.3
Repair .....	7.6.3
Steel surface preparation	
Dry abrasive blasting .....	7.2.2
Wet abrasive blasting .....	7.2.2
Steel H-piling, repair .....	7.6.2.1
Steel piling	
Inspection.....	7.5.3.1
Repair .....	7.6.2
Steel pipe piling, repair.....	7.6.2.3
Steel sheet piling, repair.....	7.6.2.2
Stone masonry structures .....	4, 1.1
Engineering investigation .....	4.3.1
Grouting .....	4.3.5
Inspection.....	4.2.1
Documentation .....	4.2.3
Settlement .....	4.2.2
Shrinkage cracks .....	4.3.3
Tuck-pointed joints .....	4.3.4
Weep holes .....	4.3.2
Stray current corrosion.....	7.1.2
Stringers	
Preservatives.....	2.1.4.6
Replacement .....	2.3.1.4
String pieces	
Preservatives.....	2.1.4.8
Replacement .....	2.3.1.5
Syntactic foam structures.....	8.1.2
Telephone wire systems, inspection .....	7.5.3.4.9
Teredines.....	2.1.2.2
<i>Teredo</i> .....	2.1.2.2
Termites	
Deterioration .....	1.5.3
Timber structures .....	2.1.2
Tetrapods (concrete armor units) .....	5.1.3
Tides .....	1.8.8
Timber structures	
Exposed area inspection .....	2.2.1
Submerged area inspection .....	2.2.2
Timber (treated), handling.....	2.1.5
Titanium alloys, steel substitute .....	7.4.1.1
Traffic control .....	1.8.4
Tremie concrete, concrete repair.....	3.4.6
Tribars (concrete armor units).....	5.1.3
Tuck-pointing, stone masonry repair . .	4.3.4
Ultrasonic testing	
Timber structures .....	2.2.2
Steel structures.....	7.5.2.3
Underwater concrete.....	3:1.4.3
Urethane (foamed-in-place) .....	8.1.2
Utility lines	
Inspection .....	7.5.3.4
Repair .....	7.6.4
Vertical lift, definition.....	1.4.2.5.4
Vibratory compaction, soil.....	6.2.3
Vinyl resin paint, protective coating (steel) .....	7.2.3
Water-borne preservatives .....	2.1.3
Water, concrete component .....	3.1.2.3
Water distribution system, inspection .....	7.5.3.4.3
Waterfront structures	
As-built drawings .....	1.6.2
Breakwater .....	1.4.2.9
Corrosion .....	1.5.3
Deterioration .....	1.5.3
Dolphin.....	1.4.2.3
Fleet mooring .....	1.4.2.4
Floating drydock .....	1.4.2.5.2
Graving dock .....	1.4.2.5.1

## Index-5

Waterfront structures (continued)	
Groin .....	1.4.2.10
Inspection.....	1. 5.4
Jetty .....	1.4.2.8
Marine railway .....	1.4.2.5.3
Mole .....	1.4.2.7
Pier .....	1.4.2.1
Quaywall .....	1.4.2.6
Replacement cost.....	1.5.2
Seawall.....	1.4.2.11
Sketches .....	1.6.3
Stability .....	1.6.4
Vertical lift .....	1.4.2.5.4
Wharf.....	1.4.2.2
Water-reducing admixtures, concrete .....	3.1.2.4
Weep holes, stone masonry structures.....	4.3.2
Wet abrasive blasting (steel).....	7.2.2
Wharf, definition .....	1.4.2.2
White rot, timber.....	2.1.2.1
Zinc inorganic, protective coatings (steel).....	7.2.3

## Index-6

 U.S.. GOVERNMENT PRINTING OFFICE: 1993 - 342-421/62086

## RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

**SOMETHING WRONG WITH THIS PUBLICATION?**

THEN... JOT DOWN THE  
DOPE ABOUT IT ON THIS  
FORM, CAREFULLY TEAR IT  
OUT, FOLD IT AND DROP IT  
IN THE MAIL!

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

PUBLICATION DATE

PUBLICATION TITLE

BE EXACT...PIN-POINT WHERE IT IS

PAGE NO.    PARA-GRAPH    FIGURE NO.    TABLE NO.

IN THIS SPACE TELL WHAT IS WRONG  
AND WHAT SHOULD BE DONE ABOUT IT:

TEAR ALONG PERFORATED LINE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

SIGN HERE:

DA FORM 1 JUL 78 2028-2

PREVIOUS EDITIONS  
• ARE OBSOLETE.P.S.—IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR  
RECOMMENDATION MAKE A CARBON COPY OF THIS  
AND GIVE IT TO YOUR HEADQUARTERS.